

EECS/CSE 70A Network Analysis I

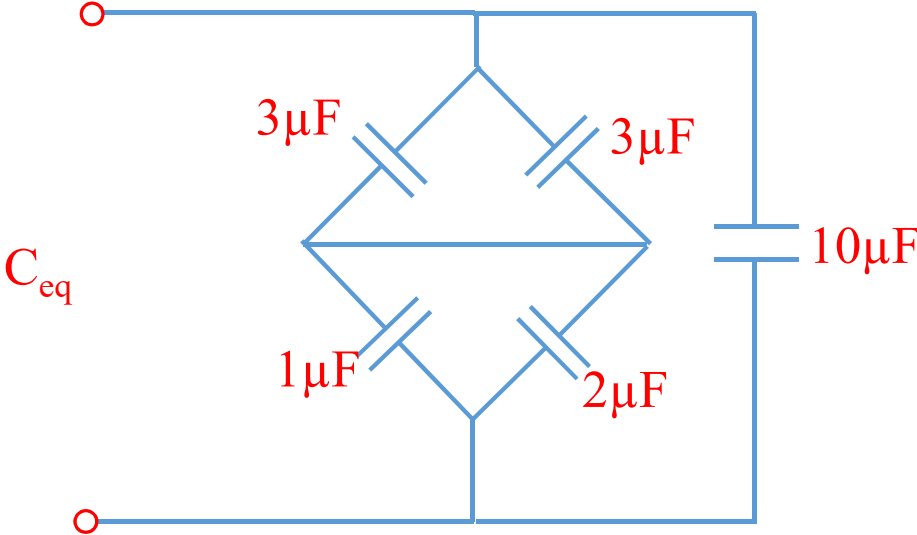
Homework #4

Due on or before

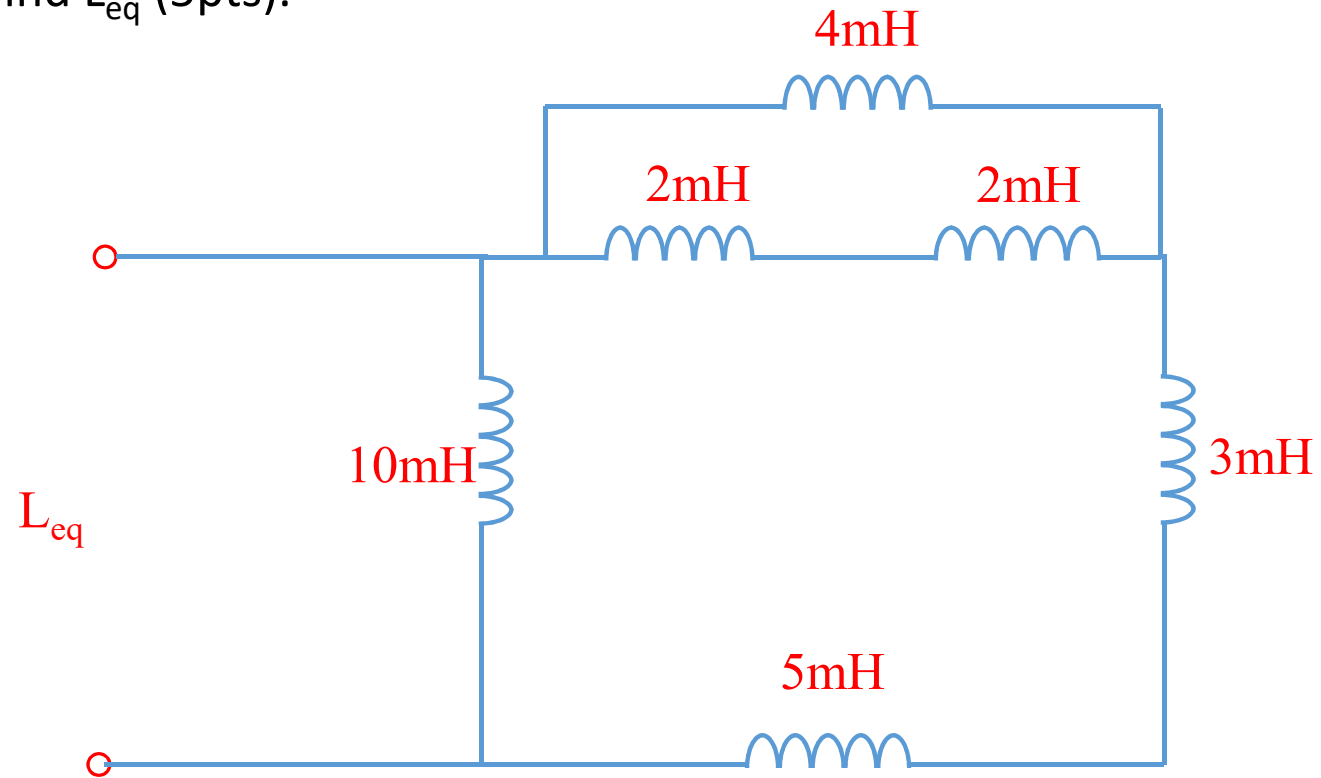
5/11/2018, Friday 5pm in the box in front of EH 4404

(You can submit your homework in any of the Tuesday or Thursday discussions before or on 5/11/2018)

Problem 1: Find C_{eq} (5pts).



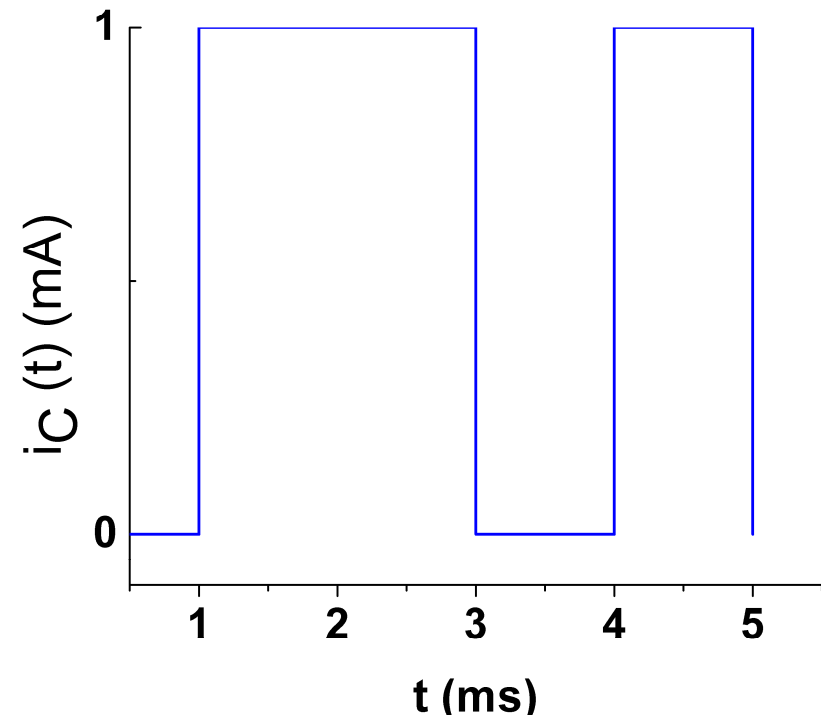
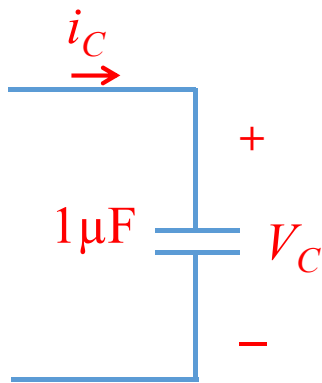
Problem 2: Find L_{eq} (5pts).



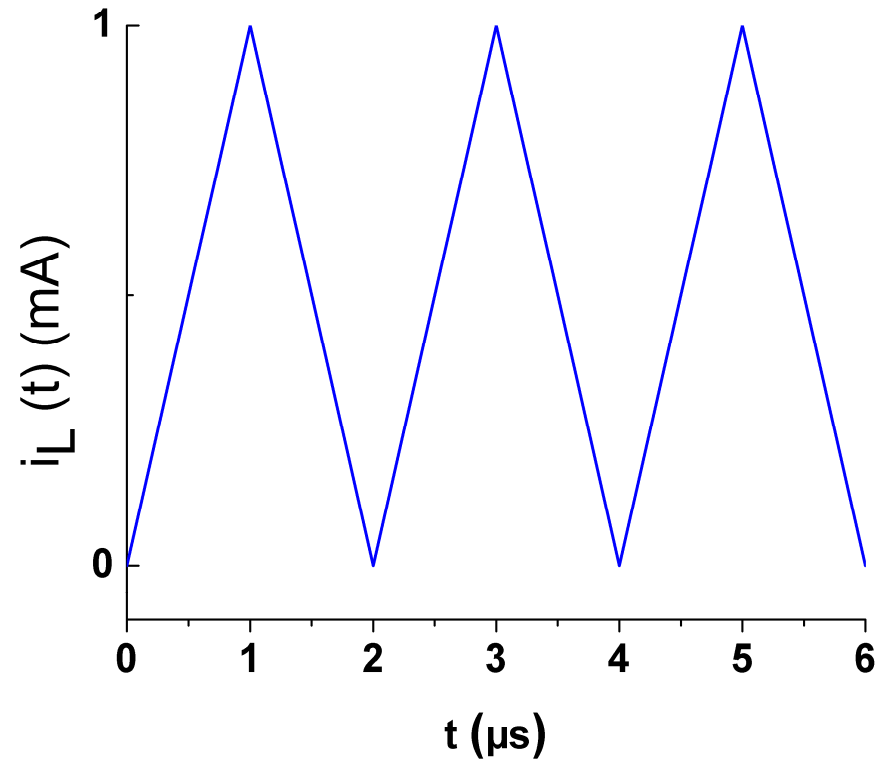
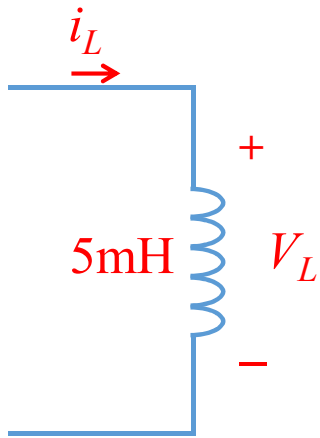
Problem 3: The current flowing through the capacitor is given as a function of time in the following figure.

Plot the voltage of the capacitor, $V_C(t)$, and the charge of the capacitor, $q(t)$. Assume the initial voltage of the capacitor is zero ($V_C(0)=0$).

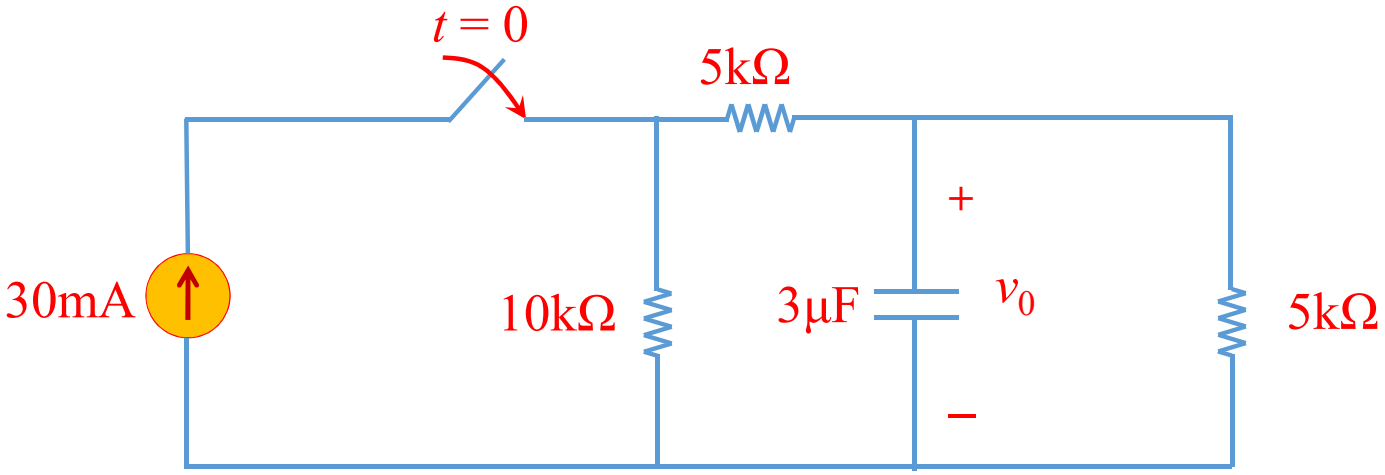
Mark the axis of your plots with numbers and units. (10pts)



Problem 4: The current flowing through the inductor is given as a function of time in the following figure. Plot the voltage of the inductor, $V_L(t)$. Mark the axis of your plot with numbers and units. (5pts)



Problem 5: (RC circuit) In the circuit below the switch closes at $t=0$. Write the expression for the voltage v_0 for $t>0$. Please clearly show the time constant calculation, initial and steady state voltage across the $3\mu\text{F}$ capacitor (35pts.)



Problem 6: (RL circuit) In the circuit below the switch opens at $t=0$. Write the expressions first for the current i_0 and then the voltage v_0 for $t>0$. Please clearly show the time constant calculation, initial and steady state current through the inductor. (40pts.)

